

WHAT IS CLAIMED IS:

1. A system, comprising:

a control card, comprising:

a control processor configured and arranged to execute a control portion of an  
interior gateway signaling protocol; and

a table of label switched paths;

a line card, comprising:

a line processor configured and arranged to execute an offload portion of an  
interior gateway signaling protocol; and

at least one timer associated with each label switched path; and

a backplane to allow the control card and the line card to communicate.

2. The network device of claim 1, the control processor further comprising a general-purpose processor.

3. The network device of claim 1, the control processor further comprising an Intel  
Architecture processor.

4. The network device of claim 1, the line processor further comprising a network-enabled  
processor.

5. The network device of claim 1, the line processor further comprising an Intel IXP  
processor.

6. The network device of claim 1, the backplane further comprising a physical backplane  
connection.

7. The network device of claim 1, the backplane further comprising a network.

8. A method of handling an interior gateway signaling protocol, comprising:

establishing connections with peer devices;

executing at least one state machine for each connection established;

exchanging and validating signaling protocol messages with peer devices; and  
communicating with a control card if there is a failure or a connection status change.

9. The method of claim 8, the method comprising receiving configuration information from a control card.

5 10. The method of claim 9, receiving configuration information from a control card further comprising receiving RSVP-TE configured peers, incoming and outgoing interface for each label switched path, and session timeout values for each label switched path.

11. The method of claim 8, exchanging and validating signaling protocol messages further comprising exchanging and validating RSVP-TE HELLO messages.

10 12. The method of claim 8, exchanging and validating signaling protocol messages further comprising exchanging and validating RSVP PATH messages.

13. The method of claim 8, exchanging and validating signaling protocol messages further comprising exchanging and validating RSVP RESV messages.

15 14. A method of establishing an offload portion of a distributed exterior gateway protocol, comprising:

initializing a line card;

registering an offload portion of a protocol to be executed by the line-card with a central registration point;

setup a control connection with a control card;

20 transmit data resource data to the control card;

receiving configuration information from the control card;

establishing signaling connections with interior gateway peers;

performing signaling protocol functions at the line-card; and

communicating with the control card during failures or signaling connection changes.

15. The method of claim 14, registering an offload portion further comprising registering with a distributed control plane architecture infrastructure module.
16. The method of claim 14, performing signaling protocol functions further comprising exchanging and validating RSVP-TE messages.
- 5 17. The method of claim 14, performing signaling protocol functions further comprising executing at least one state machine for each signaling connection.
18. A method of establishing a control portion of a distributed exterior gateway protocol, comprising:
- 10 initializing a control card;
- registering a control portion of a protocol to be executed by the control card with a central registration point;
- setting up control connections with line-cards executing offload portions of the protocol;
- 15 configuring the line cards by providing information with regard to signaling peers, link switched paths, and link switched path timeout periods; and
- performing core signaling protocol functions.
19. The method of claim 18, registering a control portion of a protocol to be executed further comprising registering the control portion with a distributed control plane architecture infrastructure module.
- 20 20. The method of claim 18, performing central signaling protocol functions further comprising controlling admission to the signaling connections
21. The method of claim 18, performing central signaling protocol functions further comprising setting quality of service parameters.
22. An article of machine-readable code containing instructions that, when executed, cause
- 25 the machine to:

establish connections with peer devices;  
execute at least one state machine for each connection established;  
exchange and validate signaling protocol messages with peer devices; and  
communicate with a control card if there is a failure or a connection status change.

5 23. The article of claim 22, the instructions causing the machine to exchange and validate  
signaling protocol messages with a peer device further causing the machine to exchange  
and validate RSVP-TE HELLO messages.

24. The article of claim 22, the instructions causing the machine to exchange and validate  
signaling protocol messages with a peer device further causing the machine to exchange  
10 and validate RSVP-TE PATH messages.

25. The article of claim 22, the instructions causing the machine to exchange and validate  
signaling protocol messages with a peer device further causing the machine to exchange  
and validate RSVP-TE RESV messages.

26. A system, comprising:

15 a control card, comprising:

a control processor configured and arranged to execute a control portion of a  
routing protocol; and  
a control version of a link state database;

a line card, comprising:

20 a line processor configured and arranged to execute an offload portion of a routing  
protocol; and

a local version of a link state database; and

a backplane to allow the control card and the line card to communicate.

27. The network device of claim 26, the control processor further comprising a general-  
25 purpose processor.

28. The network device of claim 26, the control processor further comprising an Intel Architecture processor.
29. The network device of claim 26, the line processor further comprising a network-enabled processor.
- 5 30. The network device of claim 26, the line processor further comprising an Intel IXP processor.
31. The network device of claim 26, the backplane further comprising a physical backplane connection.
32. The network device of claim 26, the backplane further comprising a network.
- 10 33. A method of distributing a routing protocol, comprising:
- discovering a new neighboring device;
  - receiving a link state update from the new neighboring device;
  - verifying validity of link state advertisements in the link state update;
  - determining if the link state advertisements are to be added to a link state database;
  - 15 if the link state advertisement is to be added to the link state database updating a local version of the link state database and communicating link state advertisement to a central version of the link state database on a control card.
34. The method of claim 33, the method further comprising determining the state of the new neighbor device.
- 20 35. The method of claim 33, the method further comprising generating link state acknowledgements.
36. The method of claim 33, the method further comprising generating router link state advertisements.

37. The method of claim 33, the method further comprising receiving the link state advertisement at the control card and instantly adding the link state advertisement to the control version of the link state database.
38. The method of claim 33, the method further comprising obtaining a link state retransmission list for the new neighbor device.
39. The method of claim 33, the method comprising determining that the link state advertisement has an entry in the local version of the link state database and removing the link state advertisement from the link state retransmission list.
40. The method of claim 33, the method comprising determining that the link state advertisement does not have an entry in the local version of the link state database and sending a link state acknowledgement.
41. A method of establishing a control portion of a routing protocol, comprising:
- setting up a control connection with at least one line card;
  - configuring the link card with a local version of a link state database;
  - determining status of neighboring devices;
  - sending a link state request list for selected neighbors to the line card;
  - sending a link state advertisement header to the line card; and
  - adding any link state advertisements to a control version of the link state database when received from the line card.
42. The method of claim 41, setting up a control connection with at least one line card further comprising:
- initializing the control card;
  - registering the control card with a central registration module;
  - determining if line cards have registered with the central registration module.

43. The method of claim 41, sending a link state request list for selected neighbors further comprising sending a link state request list for any neighbor that is exchanging information but is not yet fully adjacent.

44. An article of machine-readable media containing instructions that, when executed, cause the machine to:

discover a new neighboring device;

receive a link state update from the new neighboring device;

verify validity of link state advertisements in the link state update;

determine if the link state advertisements are to be added to a link state database;

if the link state advertisement is to be added to the link state database, update a local version of the link state database and communicate the update to a central version of the link state database on a control card.

45. The article of claim 44, the instructions further causing the machine to determine the state of the new neighbor device.

46. The article of claim 44, the instructions further causing the machine to obtain a link state retransmission list for the new neighbor device.

47. The article of claim 44, the instructions further causing the machine to determine that the link state advertisement has an entry in the local version of the link state database and removing the link state advertisement from the link state retransmission list.

48. The article of claim 44, the instructions further causing the machine to determine that the link state advertisement does not have an entry in the local version of the link state database and sending a link state acknowledgement.